

Career Pathways – An Academic Guide to Student Success



Trousdale County Schools

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Hartsville, TN 37074

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NOTICE OF NONDISCRIMINATION

The Trousdale County School System does not discriminate based on race, color, national origin, sex, disability or age in its programs or activities; and provides equal access to all programs and activities.

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CAREER AND TECHNICAL EDUCATION COURSE DESCRIPTIONS

Courses taught at Trousdale County High School

Agricultural Engineering and Applied Technologies	Agriscience ¹ (C18H19)	Principles of Agricultural Mechanics (C18H12)	Agricultural Power and Equipment (C18H13) -or- Dual Enrollment Agricultural Engineering & Applied Technologies I (C18H02)	Agricultural and Biosystems Engineering (C18H22) -or- Unmanned Aircraft Systems in Agriculture (C18H40) -or- Dual Enrollment Agricultural Engineering & Applied Technologies II (C18H35)
	Industry Certification: OSHA - 10	Industry Certification: Precision Measurement Instruments Certification	Industry Certification for C18H13: OSHA 30 General Industry -and/or- Briggs and Stratton Basic Small Engine Certification	Industry Certification for C18H22: OSHA 30 General Industry -and/or- Briggs and Stratton Master Service Technician Industry Certification for C18HXX: Remote Pilot License (FFA Part 107)

Agriculture:

PROGRAM OF STUDY: Agriculture Engineering and Applied Technologies

Agriscience

Agriscience is an introductory laboratory science course that prepares students for biology, subsequent science and agriculture courses, and postsecondary study. This course helps students understand the important role that agricultural science and technology plays in the 21st century. In addition, it serves as the first course for all programs of study in the Agriculture, Food and Natural Resources Cluster. Upon completion of this course, proficient students will be prepared for success in more advanced agriculture and science coursework.

Recommend Prerequisites: None

Recommended Credit: 1

Recommended Grade Level: 10th

Course Code: C18H19

PreACT: Composite 18 or 18 in English or 19 in Reading for students on the Agriculture Pathway.

**Parents may apply for a waiver by contacting the Principal prior to registration.*

Principles of Agricultural Mechanics

Principles of Agricultural Mechanics is an intermediate course introducing students to basic skills and knowledge in construction and land management for both rural and urban environments. This course covers topics including project management, basic engine and motor mechanics, land surveying, irrigation and drainage, agricultural structures, and basic metalworking techniques. Upon completion of this course, proficient students will be prepared for more advanced coursework in agricultural mechanics.

Recommend Prerequisites: Principles of Manufacturing and Agriscience (for students on the Agriculture Pathway)

Recommended Credits: 1

Recommended Grade Levels: 10th or 11th

Course Codes: C18H12

PreACT: Composite 18 or 18 in English or 19 in Reading for students on the Agriculture Pathway.

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Agricultural Power and Equipment

Agricultural Power and Equipment is an applied-knowledge course in agricultural engineering with special emphasis on laboratory activities involving small engines, tractors, and agricultural equipment. The standards in this course address navigation, maintenance, repair, and overhaul of electrical motors, hydraulic systems, and fuel-powered engines as well as exploration of a wide range of careers in agricultural mechanics. Upon completion of this course, proficient students will be able to pursue advanced training in agricultural engineering and related fields at a postsecondary institution.

Recommend Prerequisites: Principles of Agricultural Mechanics

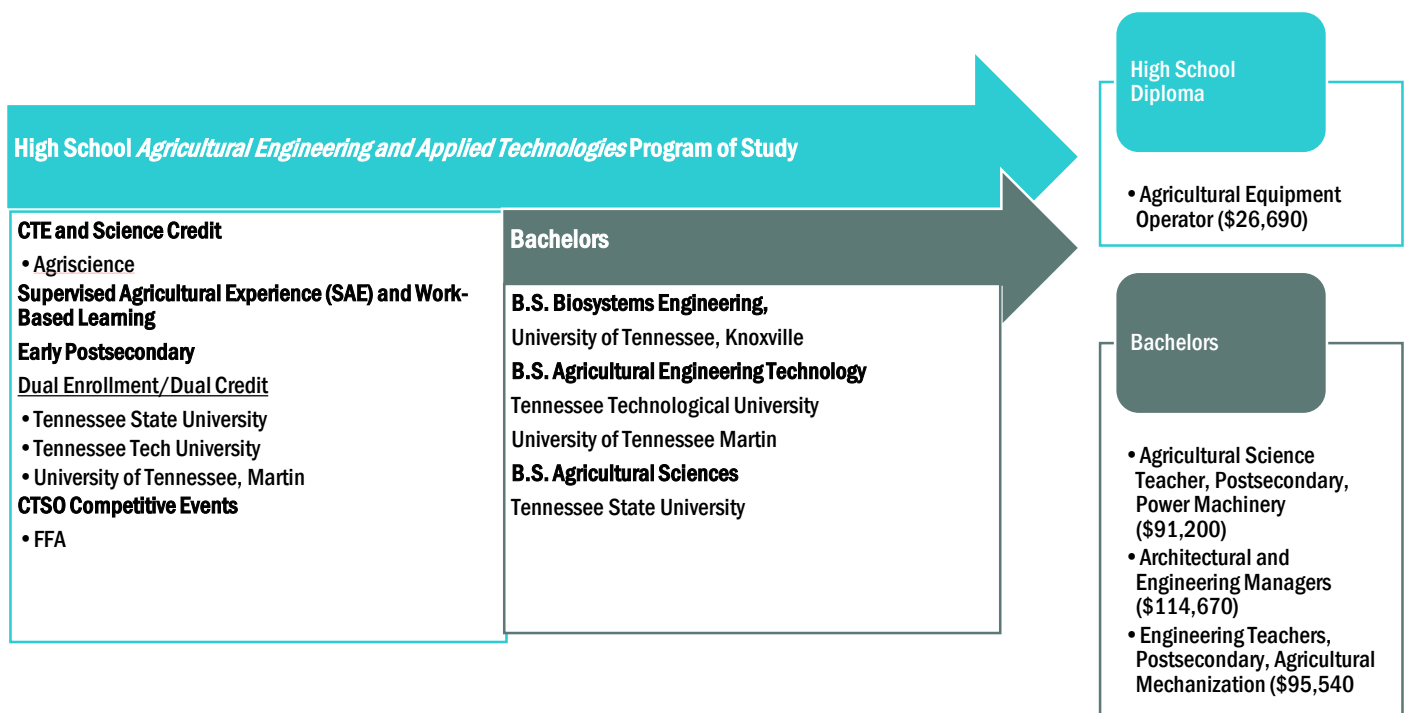
Recommended Credits: 1

Recommended Grade Levels: 12th

Course Codes: C18H13

PreACT: Composite 18 or 18 in English or 19 in Reading for students on the Agriculture Pathway.

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PROGRAM OF STUDY: Math and Science

Dual Enrollment Requirement: Math and Science Pathway students must take a minimum of (2) two of four dual enrollment courses (Psychology 1030, Sociology 1010, English 1010, English 1020) through Volunteer State Community College during the student's junior/senior year. Students may apply for the Dual Enrollment grant that provides funding for (2) two courses. In order to receive grant funding, students must be HOPE Scholarship eligible (3.0 high school GPA or 21 ACT Composite Score.) Students must also maintain a 2.75 college grade point average to remain HOPE Scholarship eligible. To be dual enrollment eligible, students must meet the qualifying score on both the English/Writing and Reading Accuplacer test as required by Volunteer State. Dual enrollment credits are transferable to all Tennessee Board of Regent colleges and universities. The fee is approximately \$500 per 3-hour course for students that are not HOPE Scholarship eligible.

Math

Students must earn four credits in math in high school that are at or beyond Algebra I. Math courses taken in middle school will serve to accelerate a student's level of math but will not substitute for the four years required in high school.

Integrated Math I

Integrated Math I emphasizes linear and exponential expressions, equations, and functions. This course also focuses on geometric congruence and interpreting linear models from quantitative data. Students continue their learning and understanding of categorical and quantitative data. Students are also introduced to reasoning with equations by solving systems of equations in two variables.

Recommended Credits: 1

Recommended Grade Levels: 9th

Course Codes: G02H19

Integrated Math II

Integrated Math II builds upon concepts taught in Integrated Math I with an emphasis on quadratic and polynomial expressions, equations, and functions. This course also focuses on geometric similarity and interpreting functions from a real life context. Students extend previous knowledge of exponential properties to rational exponents. This course also introduces probability of compound events and the complex number system.

Recommended Credits: 1

Recommended Grade Levels: 10th

Course Codes: G02H20

Integrated Math III

Integrated Math III builds upon concepts taught in Integrated Math I and Integrated Math II and emphasizes polynomial and rational expressions, equations, and functions. This course has a focus on geometric modeling and using algebra to prove geometric theorems. This course also introduces students to circles, basic trigonometric functions, and foundational statistics skills such as interpretation of data and making statistical inferences.

Recommended Credits: 1

Recommended Grade Levels: 11th

Course Codes: G02H21

Pre-Calculus

Pre-calculus is designed to prepare students for college level STEM focused courses. Students extend their knowledge of the complex number system to use complex numbers in polynomial identities and equations. Topics for student mastery include vectors and matrix quantities, sequences and series, parametric equations, and conic sections. Students use previous knowledge to continue progressing in their understanding of trigonometric functions and using regression equations to model quantitative data.

Recommended Credits: 1 credit

Recommended Grade Levels: 12th

Course Codes: G02H23

ACT Composite: 21 or Math sub score 22 and Science sub score 23

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Calculus

Calculus is designed for students interested in STEM-based careers and builds on the concepts studied in precalculus. The study of calculus on the high school level includes a study of limits, derivatives, and an introduction to integrals.

Recommended Credits: 1 credit

Recommended Grade Levels: 12th

Course Codes: G02H18

ACT Composite: 21 or Math sub score 22 and Science sub score 23

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Science

Students must earn three credits in science including Biology I, Chemistry I or Physics I, and an additional lab science.

Biology

The academic standards for High School Biology I establish the content knowledge and skills for Tennessee students in order to prepare them for the rigorous levels of higher education and future job markets. The course provides students with a wealth of experiences for both science practices and content knowledge needed in an ever-changing world. The academic standards for Biology I are research-based, supported by the National Research Council's Framework for K-12 Science Education, and establish the core ideas and practices of science and engineering that will prepare students to use scientific thinking to examine and evaluate knowledge encountered throughout their lives.

Recommended Credits: 1

Recommended Grade Levels: 9th

Course Codes: G03H17

Environmental Science

The academic standards for Environmental Science establish the content knowledge and skills for Tennessee students necessary to prepare them for the rigorous levels of higher education and future job markets. The course provides students with an opportunity to develop an understanding of interrelationships in the natural world. In addition, it allows them to identify natural and man-made environmental problems and design and evaluate possible solutions for these problems. The academic standards for Environmental Science are research-based, supported by the National Research Council's Framework for K-12 Science Education. The standards establish the core ideas and practices of science and engineering that will prepare students to use scientific thinking to examine and evaluate knowledge encountered throughout their lives.

Recommended Credits: 1 credit

Recommended Grade Levels: 9th

Course Codes: G03H33

Physical Science

Science and engineering practices are embedded in the content standards. Skills, such as pattern recognition, cause and effect, experimental design, scale and proportion, systems, structure and function, and stability, should be stressed through hands-on learning within the classroom. Inquiry is the central action within science and engineering. The process of observation, hypothesis testing, and refinement/application of ideas should be continually incorporated within the content of this course and not taught in isolation. Emphasis should be placed on critical thinking, problem solving and applications, and communication (written and verbal) of student learning. Although science is a body of content knowledge consisting of theories that explain data, science is also a set of practices that use analysis and argumentation to establish, extend, and refine knowledge. The science and engineering practices are used as a means to learn science by doing science, thus combining content knowledge with skill.

Recommended Credits: 1

Recommended Grade Levels: 10th

Course Codes: G03H00

Chemistry

Students should explore these chemistry concepts and the seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and, stability and change) through laboratory techniques, manipulation of chemical quantities, and problem-solving practices. Within the Chemistry I standards, scientific and engineering practices are embedded as a means to learn about specific topics identified for the course. Engaging in these practices with current applications will help students become scientifically literate and astute consumers of scientific information. All chemistry courses must allow students to engage in problem solving, decision making, critical thinking, and applied learning. Although science is a body of content knowledge consisting of theories that explain data, science is also a set of practices that use analysis and argumentation to establish, extend, and refine knowledge. The science and engineering practices are used as a means to learn science by doing science, thus combining content knowledge with skill. By combining content knowledge with skill, students discover how scientific knowledge is acquired and applied to solve problems or advance scientific knowledge further.

Recommended Credits: 1

Recommended Grade Levels: 11th

Course Codes: G03H12

Biology II

The academic standards for high school Biology II are built on the foundation provided by Biology I (a prerequisite course) and are research-based, supported by the National Research Council's Framework for K-12 Science Education. Biology II provides students with the opportunity to focus on a particular aspect of life science in more detail while continuing to provide knowledge that is rooted in the same crosscutting concepts and practices utilized throughout all of the sciences. The academic standards for Biology II focus on organism classification and evolution with in depth analysis of plants and animals.

Recommended Credits: 1 credit

Recommended Grade Levels: 12th

Course Codes: G03H09

ACT Composite: 21 or Math sub score 22 and Science sub score 23

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Physics

Physics course content has been divided into four sections:

PS1: Matter and Its Interactions - Properties of matter give rise to fields and forces. Students should understand that there are only a few properties of matter at a fundamental level and that these properties (charge, mass, spin) give rise to the fields and forces that exist, as we understand them.

PS2: Motion and Stability: Forces and Interactions- An understanding of the forces and interactions between objects is important for describing an object's motion and determining the stability in a system. Students should understand that forces between objects arise from four types of interactions (gravitational, electromagnetism, and strong and weak nuclear interactions) and that some physical systems are more stable than others are.

PS3: Energy - The concept of the transfer of energy in or out of a system can be explained and predicted. Students should understand the conservation of energy, how it is stored and transferred, the relationship between forces and how they are related to energy, and how we use energy in our everyday life.

PS4: Waves and Their Applications in Technologies for Information Transfer - Optics is the study of the interaction of optical photons (within the human visible range) with matter. These standards encompass the speed of light in a vacuum and other media, as well as diffraction, refraction, and the interference properties of light.

Recommended Credits: 1 credit

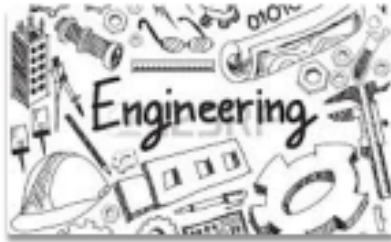
Recommended Grade Levels: 12th

Course Codes: G03H20

ACT Composite: 21 or Math sub score 22 and Science sub score 23

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Career Opportunities



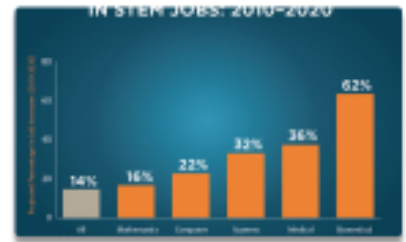
Engineering

Electrical
Mechanical
Civil



Business

Financial Planner
Accountant
Statistics



STEM

Many of the best, fastest growing, and highest paying jobs require a math and science background.

Engineer – 80,000- 100,000

Doctor – 200,000

Nurse – 70,000

Dentist – 150,000

Chemist – 55,000

Electrician – 70,000

Pilot – 160,000

Financial Planner – 60,000-
130,000

Accountant – 75,000

AVERAGE SALARIES

Mechatronics	Principles of Manufacturing (C13H05)	Digital Electronics (C13H07) -or- Robotics & Automated Systems (C13H15) -or- Project Lead the Way (PLTW) Computer Integrated Manufacturing (C13H11)	Mechatronics I ¹ (C13H16) -or- Dual Enrollment Mechatronics I (C13H04)	Mechatronics II ¹ (C13H17) -or- Manufacturing Practicum (C13H08) -or- Dual Enrollment Mechatronics II (C13H21)
	Industry Certification: Machining Level I - Measurement, Materials, and Safety Certification (NIMS) -and/or- OSHA 10 -and/or- Precision Measurement Instruments Certification (includes all subtests)	Industry Certification for C13H15: FANUC	Industry Certification for C13H16: OSHA 30 General Industry	Industry Certification for C13H17: Level 1 Siemens Certified Mechatronic Systems Assistant -and/or- OSHA 30 General Industry Industry Certification for C13H08: Production Certification (CPT) Manufacturing Processes and Production Module and Maintenance Awareness Module -and/or- OSHA 30 General Industry

Advanced Manufacturing:

PROGRAM OF STUDY: Mechatronics

Principles of Manufacturing

Principles of Manufacturing is designed to provide students with exposure to various occupations and pathways in the Advanced Manufacturing career cluster, such as Machining Technology, Electromechanical Technology, Mechatronics, and Welding. In order to gain a holistic view of the advanced manufacturing industry, students will complete all core standards, as well as standards in two focus areas. Throughout the course, they will develop an understanding of the general steps involved in the manufacturing process and master the essential skills to be an effective team member in a manufacturing production setting. Course content covers basic quality principles and processes, blueprints and schematics, and systems. Upon completion of this course, proficient students will advance from this course with a nuanced understanding of how manufacturing combines design and engineering, materials science, process technology, and quality. Upon completion of the Principles of Manufacturing course, students will be prepared to make an informed decision regarding which Advanced Manufacturing program of study to pursue.

Recommended Co-requisite: None

Recommended Credits: 1 credit for Core and two focus areas or 2 credits for all 35 standards

Recommended Grade Levels: 9th

Course Code: C13H05

Digital Electronics

Digital Electronics is intended to provide students with an introduction to the basic components of digital electronic systems and equip them with the ability to use these components to design more complex digital systems. Proficient students will be able to (1) describe basic functions of digital components (including gates, flip flops, counters, and other devices upon which larger systems are designed), (2) use these devices as building blocks to design larger, more complex circuits, (3) implement these circuits using programmable devices, and (4) effectively communicate designs and systems. Students develop additional skill in technical documentation when operating and troubleshooting circuits. Upon completion of the Digital Electronics course, proficient students will be able to design a complex digital system and communicate their designs through a variety of media.

Recommended Pre-requisite: Principles of Manufacturing

Recommended Credits: 1

Recommended Grade Levels: 10th

Course Code: C13H07

Mechatronics I

Mechatronics I is an applied course in the manufacturing cluster for students interested in learning more about careers as a mechatronics technician, maintenance technician, electromechanical technician, and manufacturing engineer. This first of two courses covers basic electrical and mechanical components of mechatronics systems as well as their combined uses with instrument controls and embedded software designs. Upon completion of this course, proficient students are able to describe and explain basic functions of physical properties and electrical components within a mechatronic system. They can logically trace the flow of energy through a mechatronic system and can communicate this process to others. They know how to effectively use technical documentation such as data sheets, schematics, timing diagrams, and system specifications to troubleshoot basic problems with equipment. Finally, they develop strategies to identify, localize, and correct malfunctioning components and equipment.

Recommended Prerequisites: Principles of Manufacturing & Digital Electronics

Recommended Credits: 1

Recommended Grade Levels: 11th

Course Code: C13H16

PreACT: Composite 18 or Math 16 or Science 15

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Dual Enrollment Class

Mechatronics II

Mechatronics II is an advanced course in the manufacturing career cluster for students interested in learning more about such careers as mechatronics technician, maintenance technician, or electromechanical technician. Following the groundwork of mechanics and electronics laid in Mechatronics I, this course covers basics of pneumatic, electro pneumatic, and hydraulic control circuits in a complex mechatronic system. In addition, the course addresses basic digital logic and programmable logic controllers (PLCs) employed in the mechanical, electronic, and control systems in a mechatronics system. Upon completion of this course, proficient students are able to explain the inter-relationships of components and modules within a complex mechatronic system. They understand the differences between hydraulic and pneumatic fluid power and can explain the scientific principles that apply. They also use technical documentation (such as datasheets, circuit diagrams, displacement step diagrams, timing diagrams, and function charts) to troubleshoot and resolve malfunctioning pneumatic and hydraulic components and circuits. They demonstrate understanding of the role of programmable logic controllers (PLC) in mechatronic systems and the ability to write, debug, and run basic ladder logic.

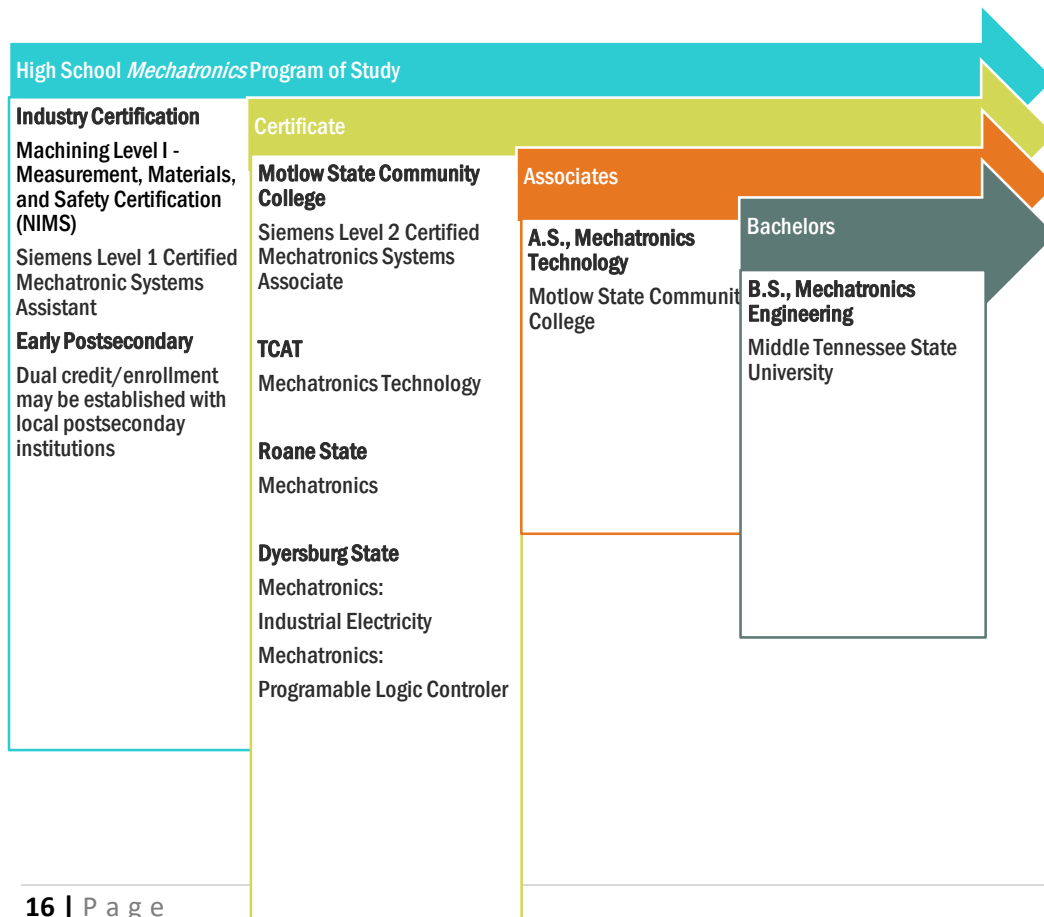
Recommended Prerequisites: Mechatronics I

Recommended Credits: 1

Recommended Grade Levels: 12th

Course Code: C13H17

Dual Enrollment Class



Nursing Services	Health Science Education (C14H14)	Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Medical Therapeutics (C14H15) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Medical Therapeutics (C14H15) -or- Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Dual Enrollment Nursing Services I (C14H03) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Nursing Education (C14H16) -and/or- Clinical Internship (C14H11) -or- Dual Enrollment Nursing Services II (C14H27)
		Industry Certification for C14H15: OSHA 10 General Industry	Industry Certification for C14H15: OSHA 10 General Industry	Industry Certification for C14H16: Certified Nursing Assistant (CNA) -and/or- Industry Certification following C14H16 AND C14H11: Certified Patient Care

Health Science:

PROGRAM OF STUDY: Nursing Services

Health Science Education

Health Science Education is an introductory course designed to prepare students to pursue careers in the fields of biotechnology research, therapeutics, health informatics, diagnostics, and support services. Upon completion of this course, a proficient student will be able to identify careers in these fields, compare and contrast the features of healthcare systems, explain the legal and ethical ramifications of the healthcare setting, and begin to perform foundational healthcare skills. This course will serve as a strong foundation for all of the Health Science programs of study.

Recommended Prerequisites: None

Recommended Credits: 1

Recommended Grade Levels: 9th

Course Code: C14H14

Medical Therapeutics

Medical Therapeutics is an applied course designed to prepare students to pursue careers in therapeutic services. Upon completion of this course, a proficient student will be able to identify careers in therapeutics services; assess, monitor, evaluate, and report patient/client health status; and identify the purpose and components of treatments.

Recommended Prerequisites: Health Science Education

Recommended Credits: 1

Recommended Grade Levels: 10th

Course Code: C14H15

PreACT: 16 Composite

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Anatomy and Physiology

Anatomy and Physiology is an upper level course designed to develop an understanding of the structures and functions of the human body, while relating those to knowledge and skills associated with pathophysiology. Upon completion of this course, proficient students will be able to (1) apply the gross anatomy from earlier courses to a deeper understanding of all body systems, (2) identify the organs and structures of the support and movement systems, (3) relate the structure and function of the communication, control, and integration system, and (4) demonstrate a professional, working understanding of the transportation, respiration, excretory, and reproduction systems.

Recommended Prerequisites: Health Science Education & Medical Therapeutics

Recommended Credits: 1

Recommended Grade Levels: 11th

Course Code: C14H09 Dual Enrollment Code: G03H43

PreACT: 16 Composite

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Dual Enrollment

Nursing Education

Nursing Education is a capstone course designed to prepare students to pursue careers in the field of nursing. Upon completion of this course, a proficient student will be able to implement communication and interpersonal skills, maintain residents' rights and independence, provide care safely, prevent emergency situations, prevent infection through infection control, and perform the skills required of a nursing assistant. At the conclusion of this course, if students have logged 40 hours of classroom instruction and 20 hours of classroom clinical instruction, and if they have completed 40 hours of site-based clinical with at least 24 of those hours spent in a long-term care facility, then they are eligible to take the certification examination as a Certified Nursing Assistant (CNA).

Prior to beginning work at a clinical site, students must be certified in Basic Life Support (BLS) Cardiopulmonary Resuscitation (CPR), and deemed competent in basic first aid, body mechanics, Standard Precaution guidelines, and confidentiality.

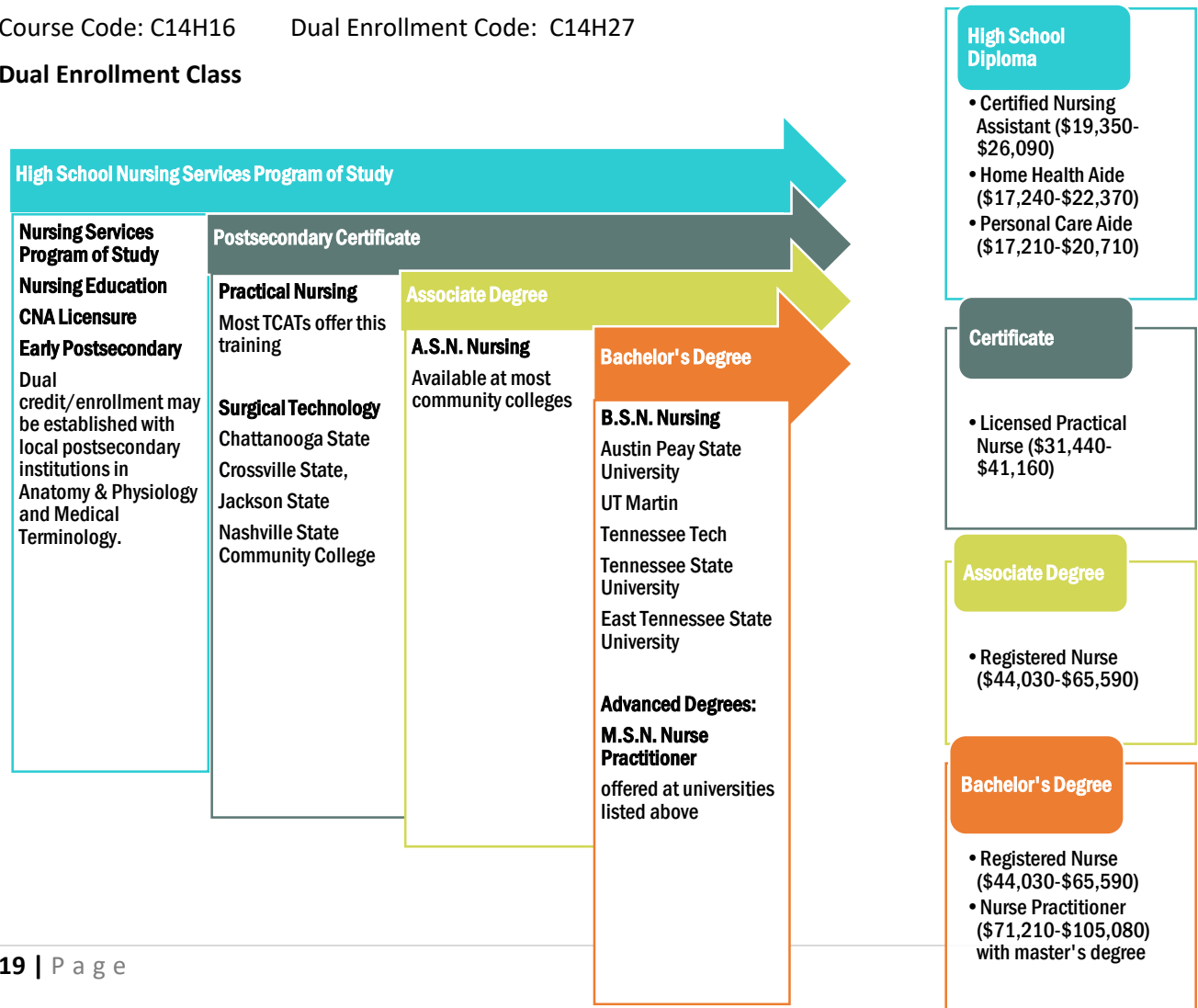
Recommended Prerequisites: Health Science, Medical Therapeutics, Anatomy & Physiology

Recommended Credits: 1

Recommended Grade Levels: 12th

Course Code: C14H16 Dual Enrollment Code: C14H27

Dual Enrollment Class



Office Management	Computer Applications (C12X00)	Business Communications (C12H16)	Business Management (C12H17) -or- Statewide Dual Credit Introduction to Business (C12H44) -or- Dual Enrollment Office Management I (C12H02) -and/or- Principles of Management CLEP -or- Cambridge AS Business (C12H14)	Advanced Computer Applications (C12H25) -or- Dual Enrollment Office Management II (C12H48) -and/or- Information Systems CLEP
			Industry Certification for C12H17: Google Suite	Industry Certifications for C12H25: Microsoft Office Specialist: (Excel) (PowerPoint) (Word) -and/or- Microsoft Office Expert -and/or- Microsoft Officer Master

Business, Management, & Administration:

PROGRAM OF STUDY: Office Management

Computer Applications

Computer Applications is a foundational course intended to teach students the computing fundamentals and concepts involved in the use of common application software. Upon completion of this course, students will gain basic proficiency in word processing, spreadsheets, databases, and presentations. In addition, students will have engaged in key critical thinking skills and will have practiced ethical and appropriate behavior required for the responsible use of technology.

Recommended Prerequisite: None

Recommended Credits: 1

Recommended Grade Levels: 9th – 12th

Course Code: C12H19

Business Communications

Business Communications is a course designed to develop students' effective oral and electronic business communications skills. This course develops skills in multiple methods of communications, including social media, as well as electronic publishing, design, layout, composition, and video conferencing. Upon completion of this course, proficient students will be able to demonstrate successful styles and methods for professional business communications using the proper tools to deliver effective publications and presentations.

Recommended Prerequisites: Computer Applications

Recommended Credits: 1

Recommended Grade Levels: 10th or 11th

Course Code: C12H16

Business Management

Business Management focuses on the development of the planning, organizing, leading, and controlling functions required for the production and delivery of goods and services. This applied knowledge course addresses the management role of utilizing the businesses' resources of employees, equipment, and capital to achieve an organization's goals. Students will participate in a continuing project throughout the course in which, individually or in teams, they will present recommendations to improve an existing business. Local business partnerships are encouraged to provide resources for faculty and students. Upon completion of this course, proficient students will be able to complete a full review of an existing business and offer recommendations for improvement as would a management consultant.

Recommended Prerequisites: Computer Applications

Recommended Credits: 1

Recommended Grade Levels: 11th or 12th

Course Code: C12H17 Dual Enrollment Code: C12H02

Dual Enrollment Class

Advanced Computer Applications

Advanced Computer Application prepares students to continue postsecondary training in business related programs, provides advanced training for students pursuing a career in administrative and information support, and supports obtaining an industry certification in specific software application (such as the Microsoft Office Suite). Course content and projects are meant to simulate workplace scenarios and draw on skills related to communications, operations, management, and teamwork in order to accomplish information management goals. Upon completion of this course, proficient students will be fluent in a variety of information management software application and will be prepared to sit for the Microsoft Office Specialist (MOS).

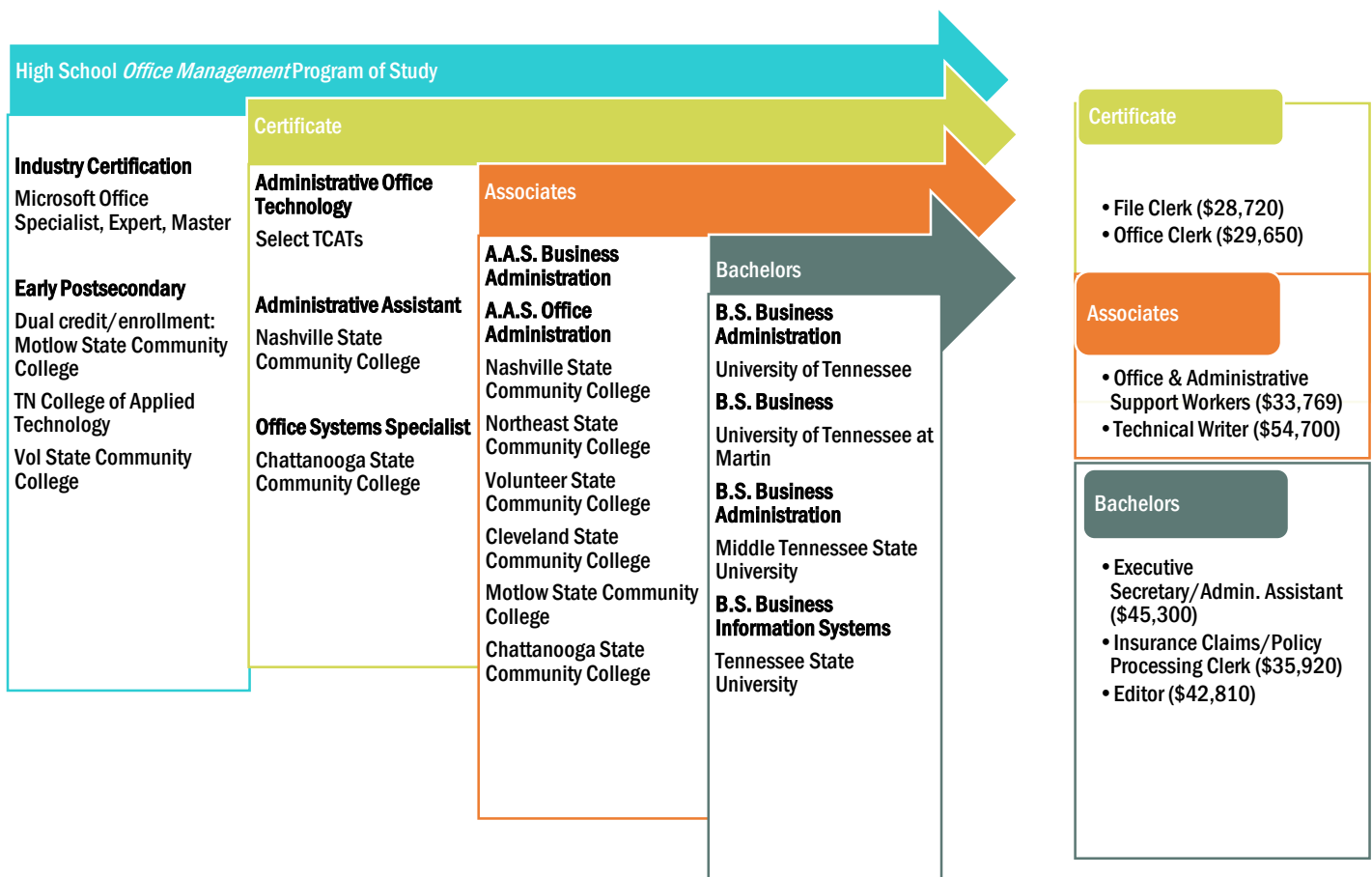
Recommended Prerequisite: Computer Applications (5891, 3638)

Recommended Credit: 1 or 2

Recommended Grade Levels: 11th – 12th

Course Codes: C12H25 Dual Enrollment Code: C12H48

Dual Enrollment Class



The courses on the next few pages are taught at TCAT-Hartsville. Trousdale County High School provides bus transportation to and from TCAT all day.

All students interested in pursuing these courses will take Principles of Manufacturing during their Freshman year and Principles of Agricultural Mechanics during their Sophomore year.

Recommended Prerequisites: Principles of Manufacturing and Principles of Agricultural Mechanics

Teacher Recommendation: Instructor(s) will evaluate students' work and progress in Principles of Manufacturing to recommend a Pathway pursuit in Welding/Pipefitting, Machine Tool, Automotive, or Computer Information Technology.

For more information on TCAT-Hartsville, visit their website at:

<https://tcathartsville.edu>

Administrative Office Technology



The Administrative Office Technology (formerly Business Systems Technology) program is designed to develop the skills and knowledge necessary for success in today's computerized office. Students are offered an opportunity to experience extensive hands-on training with up-to-date office equipment and computer software. Students also receive course work in math, English, filing, office procedures, and work simulations. Upon enrollment, students select an area of concentration from the following areas: Accounting, Administrative Assistant or Medical Administrative Assistant.

Job Duties

Perform routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.

Job Outlook

Bright Outlook: Yes

Currently employed in the area: 60,630

Current job openings per year: 6,310

Automotive Technology



The aim of this program is to provide trainees with a thorough understanding of the methods of servicing and repairing automotive vehicles. Trainees are taught to use the proper factory-approved methods of servicing, repairing, and maintaining vehicles. Training includes learning to make proper diagnosis using test equipment, hand tools, special equipment, precision measuring tools, and service manuals and specifications.

Training in automotive technology is designed to give students skills and technical knowledge which will prepare them for entrance into the automotive field. Units of instruction include training in the National Automotive Technicians Education Foundation (NATEF) certified program, math, and the eight areas of A.S.E. certification: engines, electrical systems, climate control, engine performance, brakes, chassis, powertrains and transmissions.

Job Duties

Diagnose, adjust, repair, or overhaul automotive vehicles.

Job Outlook

Bright Outlook: Yes

Currently employed in the area: 15,440

Current job openings per year: 1,590

Computer Information Technology



This program is designed to provide students with first-hand knowledge of the software, hardware, and operations of personal computers used in business and industry today. Many aspects of the personal computer including how it works, how data is processed, and how to apply the functions to solutions on the job are explored in the CIT training. The program consists of studies in the major operating systems, diagnostics, plus configuration of computers and their related peripheral devices.

Job Duties

Repair, maintain, or install computers, word processing systems, automated teller machines, and electronic office machines, such as duplicating and fax machines.

Job Outlook

Bright Outlook: Yes

Currently employed in the area: 2,120

Current job openings per year: 260

Industrial Maintenance



This program includes classroom and “hands-on” experience in electronics, electrical, pneumatics, hydraulics, motor controls, programmable controllers, robotics, machine shop, and related math. Students completing this program are prepared to perform at entry level in a typical industrial environment.

Job Duties

Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems.

Job Outlook

Bright Outlook: Yes

Currently employed in the area: 8,830

Current job openings per year: 910

Machine Tool Technology



The work of machine tool operators, machinists, tool and die makers, industrial maintenance personnel and those in related occupations requires skill in machining metal by such machine tools as milling machines, lathes, grinders, drill presses, CNC milling machines, EDM machines and the ability to use precision measuring tools. The course in machine shop is designed to give students experience on a variety of machine tools similar to those on which they will work after graduation. Instruction is given in related blueprint reading and mathematics, precision measuring, and such basic metallurgy as properties of metals, their workable characteristics, best treatment of metals, and relative hardness.

Job Duties

Set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout, and machining procedures.

Job Outlook

Bright Outlook: Yes

Currently employed in the area: 7,690

Current job openings per year: 860

Welding/Pipefitting Technology



Students will learn the various basic and advanced welding/pipefitting techniques that are common in the industries: Shielded Metal, Gas Metal, Gas Tungsten and Flux Cored Arc Welding, cutting techniques, grinding, metal preparation, symbols and blueprint reading, metallurgy, layout, fabrication, pipe/valves/fitting installation, power tools, and measurement techniques.

Job Duties

Use hand-welding or flame-cutting equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.

Job Outlook

Bright Outlook: Yes

Currently employed in the area: 6,920

Current job openings per year: 820